

a3  
cont  
b1

9 spaced apart by said air gap, and  
10 providing a control magnet means capable of generating a magnetic field of said  
11 appropriate magnitude for use by the wearer by placement in close proximity to said reed  
12 switch assembly (i) with one polarity when the hearing device is to be activated by closing said  
13 reeds to apply battery power to the device, so that the latching magnet prevents said reeds from  
14 being subsequently separated, and (ii) with the opposite polarity when the hearing device is  
15 to be deactivated by overcoming the latching force of the latching magnet and opening said  
16 reeds to remove battery power to the device. --

#### REMARKS

Applicant acknowledges the provisional election of claims 1-25 for prosecution and examination in this application in response to examiner's telephone notification of a restriction requirement which is repeated in the Action. Applicant affirms the election of claims 1-25, and does so without traverse.

The objections of the draftsperson indicated in the Notice of Draftsperson's Drawing Review which accompanied the Office Action are acknowledged. Corrected formal drawings will be filed for approval after applicant's receipt of a notification of allowable subject matter.

The status of the claims is as follows.

Claims 26-32 stand withdrawn from consideration in this application as being drawn to a non-elected invention.

Claims 1, 3, 6-17 and 20-25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. (USPN) 5,553,152 to Newton (Newton) in view of USPN 5,811,896 to Grad (Grad). Claims 2, 4-5 and 18-19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Newton in view of Grad as applied by the examiner in the rejection of claims 1 and 3, and further in view of USPN 5,293,523 to Posey (Posey). The Newton and Posey patents were cited by applicant in an IDS. Both of these section 103(a) rejections are traversed for reasons set forth below.

Grad discloses a switching device consisting of a normally open reed switch, and a biasing magnet located in proximity to the reed switch of insufficient magnetic strength to switch on (i.e., close) the reed switch but of sufficient magnetic strength to maintain the reed switch closed (i.e., latched) once the reed switch has been switched on by an additional magnetic field of the same orientation as that of the biasing magnet and until the reed switch is switched off (i.e., opened) by a magnetic field of opposite orientation.

Grad was not the inventor or developer of a latchable reed switch. The background section of his specification acknowledges the existence of prior art that had achieved almost precisely what Grad himself did, and for which he was granted a patent. OKI Electric Industry Co. had developed a latchable reed switch in which a magnetic material is used that is inadequate to close the reed switch -- but once the reed switch is switched on by application of a magnetic field it remains closed after the applied magnetic field is removed, because of residual magnetization provided by the magnetic material. The reed switch may be opened again only by applying a reverse magnetic field to the switch. See column 1, lines 40-47 of

Grad. Grad notes concern regarding OKI's use of "semi-hard magnetic materials" as having some problems in magnetic characteristics and a very high material cost [col. 1, lines 48-53].

Grad's apparent "contribution" is to have replaced the semi-hard magnetic material used by OKI with "soft" magnetic material, which resulted in allowance of his claims 1-11. Grad stresses use of "his" switch in high volume consumer goods devices such as switching Christmas tree lights or activating and deactivating electrical toys [col. 2, lines 4-7]. Although he notes that his switch is not limited to toys, the remainder of his disclosure is devoted to describing applications for Christmas tree lights and a doll house. There is no discussion of miniaturization or applications of a miniaturized switch.

As pointed out by applicant in the instant specification, hearing aid applications employing a remotely activated reed switch were known prior to applicant's invention. The switch was typically employed to trigger an input signal for a control circuit within the hearing aid. USPNs 5,359,321 to Rubic and 5,553,152 and 5,659,621 to Newton are cited in the specification as examples of hearing aids using reed switches that are activated remotely by a magnetic field introduced from a hand-held magnet, but the reed switches of each of these prior art disclosures require connection to semiconductor logic or control circuitry and thus indirectly control or switch the parameters of the hearing aid.

Examiner cites Newton '152 as disclosing a hearing device comprising an electrical circuit (22) and a magnetically controlled reed switch (34) connected to the electrical circuit "as claimed (by applicant) ... [but] Newton fails to disclose the reed switch is of the type as claimed in lines 9-17" [paragraph bridging pages 3 and 4 of the Office Action]. In fact,

however, Newton's reed switch is used for a considerably different purpose from that of applicant's reed switch. Newton's CIC (completely in the canal) device is implemented to control adjustable operational parameters of the device with a magnetic switch that is actuated (closed) and deactuated (opened) by means of a magnetic source (magnetic actuator 26) held by the user. Crucial to the apparatus and method disclosed by Newton, the magnetic actuator must be moved into and out of proximity to hearing aid 22 (and thereby, to magnetic switch 34) to close and open the switch. Control of the affected operating parameter depends upon the length of time the actuator is held (maintained) in proximity, and in one embodiment the particular operational parameter to be controlled depends upon the sequence and number of times the actuator is moved into and out of proximity to the switch.

In essence, selection of the operational parameter to be adjusted, the time of commencement of the adjustment, and the rate at which the adjustment is made, are all dependent upon movement of the actuator into and out of proximity to the switch, the number of times this occurs in sequence, and the amount of time the magnetic actuator is maintained in proximity after closure (actuation) of the switch. The examiner's attention is invited to several passages in the Newton disclosure, including, for example, column 2, lines 15-38; column 4, lines 2-8; column 5, lines 10-35; and column 6, lines 38-59.

Now contrast this apparatus and method of Newton with the device and method of applicant's invention, as disclosed and claimed. Applicant's invention includes a hearing device structured for remote activation and deactivation and a method for remotely activating and deactivating a hearing device. Each uses a magnetically controlled latchable reed switch

assembly as part of the hearing device. The latchable reed switch enables applicant's device to provide a hard or maintained activation without requiring the user to hold the magnet in proximity to the hearing device and the switch therein. Applications and operation of applicant's device -- for example, discussed commencing at page 12, line 15 of the specification -- demonstrate particular usefulness in remote switching of power on and off in a hearing devices which is substantially inaccessible by other means available to the user, with attendant achievement of significant energy efficiency.

The typical user encounters many occasions during the day when it is desirable to power down the device, such as during periods of rest, or of reading, or of annoying yammer such as television commercials or in the presence of persons who incessantly chatter or at sports events where crowd noise can be unbearable. Newton's device as disclosed cannot achieve these pleasures without the user holding the magnetic actuator in place. Even turning down the volume requires special procedures by the user in the case of Newton's device, including sequencing through the adjustable operational parameters of the device to a selected one by successive in and out hand and arm movements and thereafter maintaining the hand near the ear through periods of commencement and rate adjustment of the selected parameter. In applicant's device, appropriate control is achieved through a single step change.

If a latchable switch such as that disclosed by Grad (or OKI) were used in Newton's apparatus it would adversely affect the device operation and could render Newton's device inoperative for its intended purpose. This is because the latching and the required reversal of magnetic field to the opposite polarity for unlatching would change the operation and

effectiveness of Newton's device. Newton desires to effect rapid turn-on and turn-off of the switch at times (e.g., for sequencing to the desired adjustable operational parameter), and to provide a more measured maintenance of the "on" state at other times (e.g., to control the timing of commencement of the adjustment), and thereafter, to effect the extent of the adjustment at still other times (e.g., to achieve a desired rate at which adjustment takes place). A latching switch and polarity reversals are cumbersome and ineffective -- even unusable -- for Newton's purposes, but are simple and effective for applicant's purposes.

Additionally, applicant's invention is effective to control operating parameters of the hearing device without the need for the control logic or other special electrical circuitry required by Newton.

Thus, it is respectfully submitted that examiner's proposed combination of Grad's switch with Newton's device would render Newton's device unsuitable for its intended purposes, and would not have been sought by one skilled in the art. Moreover, as pointed out above in these remarks, and as acknowledged by Grad's disclosure, latchable reed switches were known at least as early as 1987. Applicant's FIG. 1 shows a prior art switch having a biasing magnet (M) positioned on the switch (R) (see page 4, lines 6-14). The latchable magnetic switch has been around for some time; many years before the filing date (1994) of Newton. Yet, Newton -- who presumably qualifies as a person having ordinary skill in the art -- failed to make the combination proposed by examiner. One can speculate that if he had considered such a switch, Newton would have recognized that it would render his device unsuitable. In any event, Newton failed to recognize the problems that applicant's invention

has solved. It should be noted that problem recognition is part of the inventive process, and is, itself, indicative of the merit and patentability of their solution.

Adequate and patentable distinctions are submitted to be present in applicant's main claims 1, 15 and 21 as originally submitted, in the recitations of a hearing device including a "magnetically controlled latchable reed switch assembly for controlling at least one of activation and deactivation of the hearing device or an operating parameter of the hearing device", coupled with further recital of the structure of the switch (claim 1, and its dependent claims); similar recitals in claim 15 and its dependent claims; and the recital in the method of claim 21 and its dependent claims, of "implementing the hearing device with a magnetically controlled latchable reed switch assembly to apply and remove battery power to the device including ...", and of the control magnet with one polarity to activate the switch assembly and the opposite polarity to deactivate the switch assembly.

To provide further distinction, applicant has amended the main claims to include references to miniature hearing device and miniature reed switch assembly. Applicant's specification (at page 5) stresses a principal objective of the invention resides in providing an extremely space efficient latching reed switch assembly for use within a miniature hearing device, particularly a canal device. Applicant also emphasizes the need and importance of a "circuitless" switch.

The inclusion of Posey with Newton and Grad in the rejection of claims 2, 4-5 and 18-19 under section 103(a) is submitted to be inapposite or ineffective, since nothing in the Posey disclosure cures any of the aforementioned deficiencies of either Newton or Grad as references

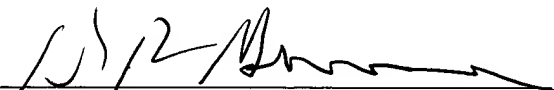


against applicant's invention set forth in those claims.

Accordingly, in view of the foregoing Amendment and remarks, it is respectfully submitted that the claims now presented herein are patentable over the art of record, and that this application is now in condition for allowance. Such favorable action is earnestly solicited. Examiner is urged to call applicant's attorney at the telephone number listed below if any issues remain, or if examiner believes a discussion would be helpful to clarify an issue.

Respectfully submitted,

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